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DIETARY HABITS, LIFESTYLES AND ANTHROPOMETRIC CHARACTERISTICS OF POLICE OFFICERS IN OWO LOCAL GOVERNMENT AREA ONDO STATE, NIGERIA

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ABSTRACT

Background: Poor nutritional status couples with sedentary lifestyles are some of the risk factors that hindered optimum health not only among individual but also the Nigeria police officers.

Objectives: This study aimed at assessing the dietary habits, lifestyles practices and anthropometric status of police officers in Owo local government area of Ondo state.

Method: The study was a descriptive cross-sectional study, which involved 200 (140 male and 60 female) police officers who were randomly selected from seven (7) police divisional stations in Owo local government area of Ondo state. Information on socio-demographic characteristics, medical and lifestyle was obtained using a self-administered questionnaire. Food consumption data was obtained using the World Food Programme (WFP)'s standard food consumption score questionnaire. Obesity was assessed using Body Mass Index (BMI), Waist –Hip Ratio (WHR) and Waist Circumference (WC). Statistical Product Service Solution (SPSS) version 20.0 was used in data analysis. Coded data were analyzed using descriptive and statistics results presented in frequencies and percentage

Result: Finding shows that nearly half (46%) of them were of 30-49yrs. More (70%) male police officers participated than female police officers (30%). One third (33%) had parents that were suffering from chronic diseases while 38% were hypertensive. About (60%) drink alcohol, 67% smoke cigarette, 23% did not engage in physical exercise. Large number (66%) always adds vegetables to their diet, 30% took orange fruit been the most widely consumed and 16% skipped meal. On food consumption score, 50% met the acceptable consumption score for calorie level Prevalence of underweight and Overweight/Obesity as determined by abnormal values for BMI, WC, and WHR, 17%, 30%, 35% and 16% respectively.

Conclusion: This study observed high prevalence of obesity, poor dietary practices and higher consumption of alcohol and cigarette among the police officers in Owo.

Keywords: *Hypertension, overweight/obesity, police officers, alcohol consumption*

INTRODUCTION

The Nigeria Police Force is the principal law enforcement agency in Nigeria (Nigeria police force, 2016) with staff strength of about 371,800 (1).There are currently plans to increase the force to 650,000, adding 280,000 new recruits to the existing 370,000. The NPF is a very large organization consisting of 36 State commands grouped into 12 zones and 7 administrative organs (1). The health of the Nigerian police is crucial in order to safeguard the lives and properties of Nigerian citizens. The significant of healthy nutritional status to the overall wellness and health status of an individual including the Nigerian police personnel cannot be underestimated (3). Adequate nutrition is the foundation of health, health is the foundation of happiness, skills and performance and the Nigeria police are not an exception to this (4). Food security existed when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life (5, 6).

Food Consumption score is an indicator useful in categorizing and tracking individual/ households' food security over time, specifically as a proxy for caloric sufficiency (7). Food insecurity has a greater impact on nutritional status of an individual including the Nigeria police officers. Apart from the fact that it limit the efficiency of the sufferer, food insecurity it also open up the body to opportunistic infections, weaken body alertness and reduce the strength of the body immunity (8, 9).

The Japan national Institute for health and occupational safety reports that law enforcement personnel have a higher incidence of stress induced injury and illness, particularly cardiovascular and lower back problems, than the average population (10, 11).

Consumption of energy dense foods, saturated and tran's fats, sugars and salt which are often found in snacks, processed foods and drinks can lead to weight gain (4). Studies have shown that Police officers often follow a fast and convenient type of diets, which is

high in fat (4, 12). This type of diet is a contributing factor for the development of overweight/obesity and arteriosclerosis or hardening of the arteries which has a direct influence on high blood pressure, cardiovascular disease such as stroke and heart attack (12). However, data from other uniform personnel such as the Nigeria Correctional officials, Nigeria Army and the Nigeria Civil Defense officials had reported that alcohol consumption and tobacco use were very significant and higher among these officials compared to the general population in Nigeria ((12). 13).

Poor lifestyles such as alcohol abuse and tobacco consumption levels often relate to individuals stress-coping mechanism and had been evaluated to be associated with many forms of police misconduct, and recent studies on problem officers provide descriptions of cases that involve intoxicated police engaged in various forms of misbehavior and crime (9, 13,14). Over indulging in alcohol consumption and cigarrete smoking had been proven to have negative impact on nutritional status and mental well-being of an individual (15). Evidence suggests that diet and work environment that mix sedentary hours with sudden intense physical activity make police officer significantly more vulnerable (16). Study in Cameron had shown that heart disease causes 45% of on-duty fire-fighters death and 22% of police officer deaths (16).

The policing stage is very important biophysical social process in which an inadequate diet may affect the performance and intellectual capacity of individuals; this maybe of special relevance to life quality in developing countries, where its inhabitants face adverse socio-economic, cultural and nutritional conditions (4). Adequate nutrition is required for proper community policing by the Nigerian Police. There appears to be lack of data on the dietary habits, lifestyles and anthropometric status of Nigeria police personnel most especially the officers in Owo local government. This study provides an insight into the dietary habits, lifestyles and anthropometric characteristics of police officers in Owo local government.

MATERIALS AND METHODS

Study design

The study was a descriptive cross-sectional study in design

Study area

The study was carried out in Owo local government area of Ondo State, Nigeria, between the months of April to August 2016. Owo was one of the first local governments created, when Ondo State was created in 1976 from the Old Western State. Owo is a city approximately between latitudes 7^{o} 11^{1} and $7^{o}183^{1}$ and longitudes 5^{o} 35^{1} and 5^{o} 583^{1} East of Greenwich meridian (17). It is situated in southwest of Nigeria at the southern edge of the Yoruba hills (Elevation of 1,130ft (344m) and at the intersection of road from Akure, Kabba, Benin city (17). Owo is situated halfway between the towns of Ile-ife and Benin City, about 45kilometer east of Akure, the state capital (17). The total population of the local government according to the 2006 census (18) is 218,886 of which 110,429 are males, while 108,457 are females (18). Majority of the people are government workers, Christianity and Islam are generally the dominating religion practiced by the inhabitants of Owo.

Study population

The study population consisted of apparently healthy male and female police officers in Owo local government area of Ondo state.

Ethical approval

Ethical approval was obtained for the study from the ethic committee of Nutrition and Dietetics department, Rufus Giwa Polytechnic, Owo with reference number (RUGIPO/NUD/GEN/A1/109). Oral consent from the participant was obtained after the objectives of the study were explained to them.

Sampling procedure

A purposive sampling method was used in selection of 200 police officers in all the police Divisional Stations in Owo local government area of Ondo state

Data collection

Questionnaire

Pre-tested, structured questionnaires validated by lecturers in Nutrition and Dietetics Department of Rufus Giwa Polytechnic, Owo, was use to obtain data from participants. The questionnaire contains sections that focus on socio-demographical characteristics, dietary habits, lifestyle patterns and food consumption score of the respondents

Food Consumption Score calculation

The table 1 below shows how Food Consumption Score for each participant was calculated. Participants were asked to recall the food consumption in the previous seven days. Each food items was given a score of 0 to 7, depending on the number of days it was consumed.

Table 1: Food Consumption Score Analysis

Food groups	Weight (A)	Days eaten in past 7 days (b)	Score =A*B
Cereals, tubers and root crops	2	7	14
Pulses	3	1	3
Vegetables	1	2	2
Fruits	1	0	0
Meats and fish	4	0	0
Milk and milk products	4	1	4
Sugar and fruits drink	0.5	4	2
Oils, fats and butter	0.5	2	1
Composite score			26

Food Consumption Score Analysis
Food items were grouped according to food groups and the frequencies consumption of all the food items surveyed in each food group are summed (table 1). Any summed food group consumption group frequency value over 7 is recorded as 7. Each food group is assigned as weight, reflecting its nutrient density for each participant. Food consumption score was calculated by multiplying each food group frequency by each food group weight, and then the summing these score into one composite score. Individual who score are within 0-28 was regarded as poor food consumption score, while score within 28 to 42 was regarded as borderline. Food consumption score greater than > 42 was considered as acceptable (19).

Anthropometric measurements
The weight of the subjects were measured using a portable bathroom scale (HANSON model), to the nearest 0.1kg with the subjects standing upright on the scale barefooted at shoulder level, arms by the side and the head straight in line with using standard methods (20,21). The height of the participants were measured by Standiometer with the subject standing erect and barefoot on the height meter with back to the height meter and looking straight in a Frankfurt position. The height was taken and recorded to the nearest 0.1cm (20, 21).

Waist and Hip circumference measurement
Waist circumference measurement was taken in line with the WHO protocol using a non-stretch tape measure (Butterfly, China). The tape rule was placed at the midway between the lower rib margin and iliac crest. Measurements were taken and recorded to the nearest 0.1cm (20, 21). Hip Circumference measurement was taken by placing the tape horizontal plane around the hip at the point of the greatest circumference with the measurement taken to the nearest 0.1cm (20, 21).

Determination of Waist –Hip- Ratio (WHR) and Body Mass Index (BMI)
Truncal obesity was determined with Waist –Hip-Ratio (WHR) and waist circumference (WC). Waist – Hip- Ratio (WHR) was calculated by dividing the waist circumference by the hip circumference. WHR >0.85 for females and >0.95 for males were considered as abnormal while lesser values were regarded as normal (20). Abnormal WC was defined as WC >102 cm for males and 88 cm for females while lesser values will be normal (20). Body mass index was calculated using the formula BMI (kg/m^2) $=\frac{weight\ (kg)}{height\ (m^2)}$ (21). Body Mass Index was classified as underweight BMI (<18.5), Normal within (>18.5 ≤24.99), Overweight (≥25≤ 29.99) and Obesity BMI (>30kg/m^2) (21).

Statistical Analysis
Statistical analysis was performed using the statistical package for social sciences (SPSS version 20.0). Descriptive statistics such as frequencies, percentages were used to analyze socio-demographic characteristics and all anthropometric data

RESULTS
Socio-demographic characteristics of the respondents
The table 2 below expresses the socio-demographic characteristics of the study participants. In this study, a total of 200 respondents were assessed, 34% were between the age group of 30years – 39years. More than half (70.0%) of the respondents were male, it was also observed that 122 (61.0%) of the respondents were married, 48 (24.0%) were single, 22 (11.0%) were divorced and 8 (4.0%) are widowed. Eighty two percent (82.0%) were on general duty while 36 (18.0%) were on counter. However, Christianity was the major religion practiced by many 186 (93.0%) of the respondents. More than half of the police officers (56.0%) were Yoruba by tribe. On educational attainment of the police officers, (46.0%) had HND/BSC/MMBS certificate.

Table 2: Socio-Demographic Characteristics of the Subjects

Variables	Percentage (N=200)	Frequency (%)
Age		
20-29	58	29.0
30-39	78	34.0
40-49	24	12.0
50- 59	30	15.0
60 and above	10	5.0
Total	**200**	**100.0**
Sex		
Male	140	70.0
Female	60	30.0
Total	**200**	**100.0**
Marital status		
Single	48	24.0
Married	122	61.0
Divorced	22	11.0
Widowed	8	4.0
Total	**200**	**100.0**
Number of children		
None	52	26.0
1-2	88	44.0
3-4	58	29.0
5-6	2	1.0
Total	**200**	**100.0**
Work section		
General duty	164	82.0
Counter	36	18.0
Total	**200**	**100.0**
Religion		
Christianity	186	93.0
Islam	14	7.0
Total	**200**	**100.0**
Education qualification		
PSLC	22	11.0
SSCE	30	15.0
ND/NCE	56	28.0
HND/B.Sc	92	46.0
Total	**200**	**100.0**
Income (~~₦~~)		
10-50,000	20	10.0
51-100,000	74	36.0
101-150,000	78	34.0
151-200,000	28	14.0
Total	**200**	**100.0**

The lifestyle and medical history of the respondents is represented in the table 3 below. About 33% of the respondents revealed that their parents experience chronic disease of which Father/grandfather were 24.0% while 9.0%were mother/grandmother. As at the time of data collection (59.0%) drinks alcohol also 67.0% smokes. Thirty eight percent (38.0%) were Hypertensive, while 23.0% don't engage in exercise.

Table 3: Lifestyles and medical History of the Respondents

Variables	Percentage (N=200)	Frequency (%)
Parents experience chronic Disease		
Yes	66	33.0
No	134	67.0
Total	**200**	**100.0**
If yes, who among them		
Father/grandfather	48	24.0
Mother/grandmother	18	9.0
Total	**66**	**33.0**
Drinks alcohol		
Yes	118	59.0
No	82	41.0
Total	**200**	**100.0**
If yes, how long		
3 years ago	70	35.0
6 years ago	48	24.0
Total	**118**	**59.0**
Smoked cigarette		
Yes	134	67.0
No	66	33.0
Total	**200**	**100.0**
Have any medical conditions now		
Yes	124	62.0
No	76	38.0
Total	**200**	**100.0**
If yes, the disease condition		
Hypertension	76	38.0
Fever	52	26.0
Other	72	36.0
Total	**200**	**100.0**
Have time for exercise		
Yes	154	77.0
No	46	23.0
Total	**200**	**100.0**
If yes, what type?		
Jogging	56	28.0
Running	18	9.0
Football	46	23.0
Trekking	38	19.0
Press up	42	21.0
Total	**154**	**77.0**
Time for exercise in a week		
2times	34	17.0
3times	86	43.0
4times	54	27.0
5times	22	11.0
Above 5 times	4	2.0
Total	**154**	**77.0**

Thirty eight percent (83%) ate breakfast between the hours of 6-8am and 17.0% ate breakfast above 8am. About 16.0% skipped meal of which 14.0% of the meal skipped was lunch. Sixty six percent (66.0%) of the police officers eats vegetables. Regarding the consumption of fruits, 29.0% don't eat fruits every day. Orange was the leading fruits consumed by the police officers often (30.0%), while 80% agreed to the fact that it is good to eat fruits and vegetables (table 4)

Table 4: Dietary habits of the respondent

Variables	Percentage (N=200)	Frequency (%)
Breakfast time		
6 – 7 am	76	38.0
7 – 8 am	90	45.0
8 am and above	34	17.0
Total	**200**	**100.0**
Skip meals		
Yes	32	16.0
No	168	84.0
Total	**200**	**100.0**
If yes, what type?		
Breakfast	4	2.0
Lunch	28	14.0
Don't skip meal	168	84.0
Total	**200**	**100.0**
When do you eat dinner?		
6 – 7 pm	38	19.0
7 – 8pm	110	55.0
8 – 9pm	36	18.0
Above 9pm	16	8.0
Total	**200**	**100.0**
Usually take vegetables?		
Yes	132	66.0
No	68	34.0
If Yes, often		
Very often	146	73.0
Often	54	27.0
Total	**200**	**100.0**
Days in a week do you eat vegetables?		
1 day	46	23.0
2 – 3 days	70	35.0
4 – 5 days	58	29.0
6days	18	9.0
Everyday	8	4.0
Total	**200**	**100.0**
Fruits you eat in the last one month?		
Cucumber	4	2.0
Watermelon	28	14.0
Orange	60	30.0
Garden egg	48	24.0
Apple	10	5.0
Pineapple	50	25.0
Total	**200**	**100.0**
Take fruits every day		
Yes	142	71.0
No	58	29.0
It is good to eat fruits and vegetables?		
Yes	160	80.0
No	40	20.0
Total	**200**	**100.0**

The table 5 below shows the food consumption score of the respondent in the studied population 50% were acceptable, 28% were at borderline and 22% had poor food consumption score.

Table 5: Food consumption score of the respondents

Variables	Percentage (N=200)	Frequency (%)
Acceptable	100	50.0
Borderline	56	28.0
Poor	44	22.0

The table 5 below shows the nutritional status of the respondent. This study found that 17.0% of the study population was underweight, more than half (53.0%) of the respondents had normal body mass index. While (15.0%) were overweight and the rate of obesity among the respondents is (15.0%). Anthropometric status of the respondents has revealed by waist- hip ratio shows that 16.0% and 35% of the respondents were central obese using WHpR and WC respectively.

Table 6: Anthropometric status of the respondent

Variables	Percentage (N=200)	Frequency (%)
Body Mass Index		
<18.5 (underweight)	34	17.0
18.5 – 24.9 (Normal)	106	53.0
25-29.9 (Overweight)	30	15.0
30-34.9 (Obesity class1)	30	15.0
Waist Circumference		
<88cm (F) <102cm (M) (Normal)	130	65.0
>88cm (F) >102cm (M) (Excess)	70	35.0
Waist-Hip Ratio		
<0.85(F) <0.90 (M) (Normal)	168	84.0
≥0.85(F) ≥0.90(M) (Excess)	32	16.0

DISCUSSION

Dietary habits, lifestyles and anthropometric characteristics had proven to be factors to be reckon with in regard to the wellbeing of the police officers in Owo Local Government, Ondo State, Nigeria. The participants in this study were majorly (70%) male police officers and 30% of them were females. This establishes that two-third of the Nigeria police officers in Owo are male. This is in agreement to the observation of Okeke *et al.* (3) in a similar study among police officers in Bida, where male police officers constituted higher number (69%) of staff population. More than half of the respondents were married (61%) while 24 % of them were single. This trend was also observed by Okeke *et al*. (3). However, Christianity was a predominant religion practiced by many (93%) of the respondents. Having higher number of the participants to be Christians could be attributed to the fact that Owo city is a Christian dominating city in the south western part of Nigeria. In terms of educational attainment, 46% of the participants had a degree certificate, 28.0 % with national diploma/ national certificate of education. It's worth to know that since 2010 the minimum qualification to enter Nigeria police force is National diploma, hence this could have been the reason for many of them being a degree or National diploma holders. On the average monthly income, 39.0 % of the respondents earned within **(₦)** 101-150,000. Recently, there has been an improvement in the salary of the uniform workers most especially the Nigeria police this could be linked to the high income earned by this police officers in Nigeria couple with the fact that majority of them are graduate. In this study, about (33%) police officers reported that their parent suffered from chronic diseases of which 24.0% these parents were either father or grandfather and only 9.0% of the affected parents were mother or grandmother. Though, more than half of the study participants (62%) did not suffer from any disease as at the time the study was conducted, while about 17.5% were hypertensive. The prevalence of chronic disease as observed in this study could be due to lifestyle (smoking, alcohol consumption couple with physical inactivity). A healthy lifestyle is known to include nutrition, adequate physical activity, and avoidance of tobacco abuse (22, 23). Despite the campaign against excess consumption of alcohol, the result of this study reveals that more than half (59%) of the police officers had used alcohol in the past year and only about 41.0% were not drinkers. The higher rate of alcohol use reported among police officers may have resulted from their lack or inadequate knowledge of negative consequences of alcohol consumption. People who abuse alcohol are prone to occupational and other health problems that make them vulnerable to developing psychological distress (24, 25). No wonder the abuse use of gun among Nigeria police has been on the increase over one decade now. Even in Ondo state, there has been an increase in the number of death of civilians from the police gunshot. This habit could be influenced by excess consumption of

alcohol. About one-third (26%) of the respondents ate their dinner between the hours of 8pm and above. This is a dangerous habit which might have been fueled by lack of knowledge among the police officers on the negative effects of eating late night. Late dinner complicates glucose management and prevent sound night sleep (23).The percentage of the respondents that ate fruits (71%) was very high and should be encouraged when compared to numerous health and protective benefits which can be supplied from fruit consumption. This high consumption of fruits observed among the participants in this study was not in agreement with observation among teachers in a study conducted by (22) where 31.2% of the study population regularly consumed fruits. Studies have shown that the consumption of fruits does not only form a formidable parts of the diet, it is associated with a lowered risk of degenerative disease such as obesity, cancer, cardiovascular diseases, cataract, brain and immune dysfunction (8; 26).Vegetables consumption was high (66%) as well, this could be that vegetables formed a formidable soup and sauce ingredients for an average Nigerian household (22). Fruits and vegetables are good source of vitamins, minerals and dietary fibre which have been known to improve health and prevent chronic non communicable disease in adulthood, such as increased impairment of glucose associated with ageing (22, 27). The food consumption score (FCS) is a proxy indicator of household caloric availability. Validations studies have demonstrated that the FCS and the Household dietary diversity score (HDDS) are both associated with caloric intake, as well as with each other (28, 29). In this study only half (50%) of the respondents met up the acceptable food consumption score while 22.0% of the respondents were food insecure and didn't meet up the acceptable of borderline of food consumption. The FCS indicator is useful for categorizing and tracking individual/ households' food security across time and has been validated against quantity of caloric intake but yet to be validated against adequacy of macronutrients or micronutrients (7, 30). The rates of Overweight/Obesity as determined by abnormal values for Body Mass Index (BMI), Waist Circumference (WC), and Waist-Hip Ratio (WHR), were 30%, 35% and 16% respectively. All these measurements confirm the prevalence of overweight and obesity among respondents in study location. The highest rate of Overweight/Obesity was observed with waist circumference, while the lowest was observed with (WHR) parameter. Difference in the rates of Overweight /Obesity using these methods have been reported (31, 32, and 33). The percentage of Overweight/Obesity reported in this study using BMI is lower than reported value (51.1%) by Okeke *et al.* (3) among uniform personnel in Bida, Nigeria. However, Overweight/Obesity is defined as the abnormal or excessive fat accumulation that may impair health. It does not only express degree of excess fat but also fat distribution in the body which determines the health risk associated with excessive weight gain (34, 35). Overweight and obesity are the fifth leading risk for global death. At least 2.8million adults died each year as a result of being overweight or obese (34). The prevalence of overweight and obesity (15% vs 15%) in this study respectively was lower than similar study reported (44.7 vs 27.3%) by Sandra *et al.,* (36), among health workers in Lagos where the rate and risk factors of overweight and obesity among Health Service Providers (HSPs) in a tertiary health care facility in Nigeria was determined (37,38,39). Though the obesity rates defined by the three methods vary, two of the parameters confirmed that one third of the study population is either overweight or obese. This reveals a high rate of overweight and obesity in the population. A contributing factor to overweight/Obesity may be attributed to the fact that the study location is urban where there is high intake of western diet and change in local dietary patterns due to urbanization are common (40,41).

Conclusion

This study found a high prevalence general and central obesity, poor dietary practices, high consumption of alcohol and cigarette among the respondents. Despite the assumption that the police officers should be fit, stay healthy and alert all the time, obesity control was very poor as well as high blood pressure as well as revealed by the respondents. Many of the police officers were physical inactive and consumed less of fruits. This study had shown that more surveillance and intervention studies are needed to investigate the best way to control the use of alcohol, improve food security, stop tobacco and its related substance use among the police officials so that they can portrait a good lifestyle models to the Nigeria citizens whom they are securing their lives.

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Declaration of conflict of interest

The authors report no conflicts of interest. The authors alone are responsible for the design, data collection, writing and funding of this research.

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